

# Wie misst Oracle die Verwendung von Database Features?

Martin Berger  
DOAG 2015

# Martin Berger

Oracle DBA since 2000

 <http://berxblog.blogspot.com>  
 @martinberx  
 martin.a.berger@gmail.com

# Disclaimer

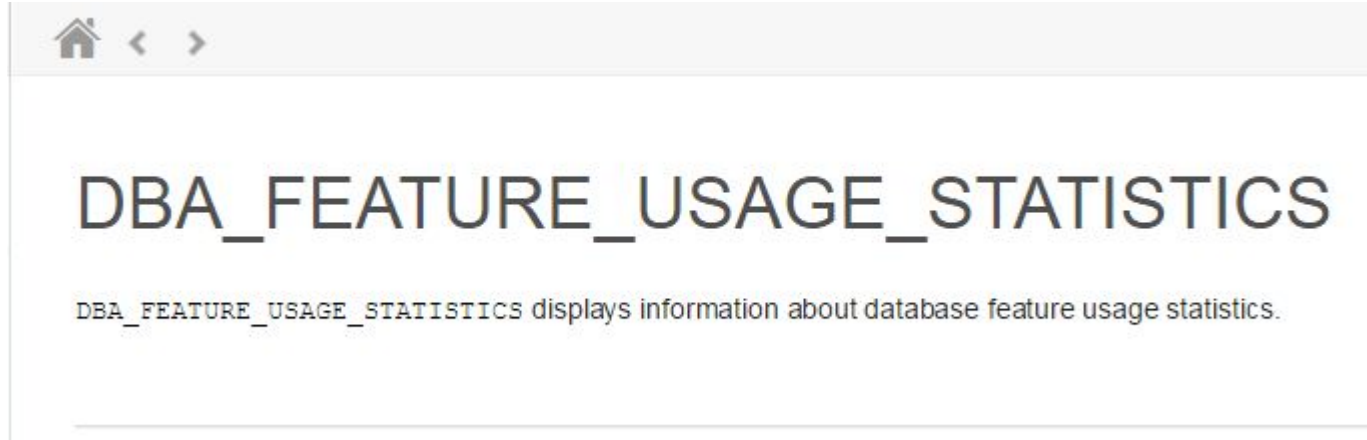
- this presentation is ONLY about the features and possibilities of DBA\_FEATURE\_USAGE\_STATISTICS view and supporting packages/procedures
- NO information about LMS activities
- NO information about license optimization

# Unconference - 1st floor !

LOS und alle anderen Fragen...

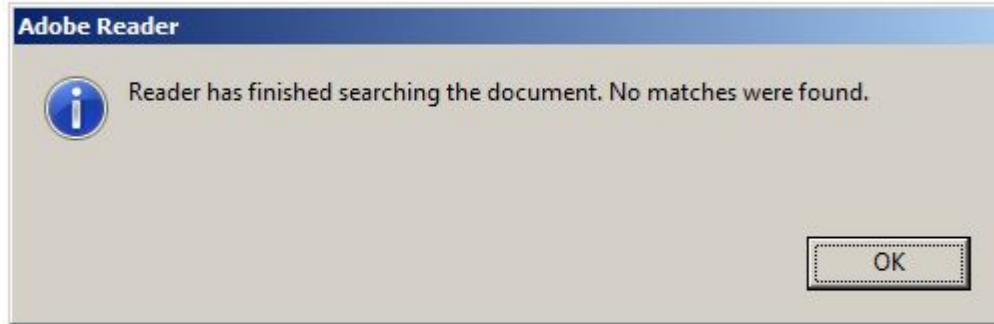
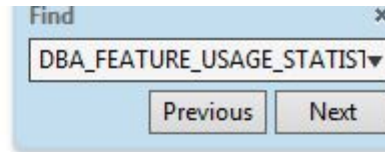
LMS Hautnah  
Stehen für Fragen zur  
Verfügung.  
LMS-Deutschland

# DBA\_FEATURE\_USAGE\_STATISTICS



<http://docs.oracle.com/database/121/REFRN/GUID-B8A38B9B-3AAA-4341-AA05-4309870CE73B.htm#REFRN23396>

# DBA\_FEATURE\_USAGE\_STATISTICS



**Oracle® Database**  
Licensing Information  
12c Release 1 (12.1)  
E49208-11

# DBA\_FEATURE\_USAGE\_STATISTICS

## DBA\_FEATURE\_USAGE\_STATISTICS

DBID	database ID of database being tracked
NAME	name of feature
VERSION	the database version the feature was tracked in
DETECTED_USAGES	number of times the system has detected usage for the feature
TOTAL_SAMPLES	number of times the system has woken up and checked for usage
CURRENTLY_USED	if usage was detected the last time the system checked
FIRST_USAGE_DATE	the first sample time the system detected usage for the feature
LAST_USAGE_DATE	the last sample time the system detected usage for the feature
AUX_COUNT	extra column to store feature specific usage data
FEATURE_INFO	extra column to store feature specific usage data
LAST_SAMPLE_DATE	last time the system checked for usage
LAST_SAMPLE_PERIOD	amount of time between the last two usage sample times, in number of seconds
SAMPLE_INTERVAL	[ 604800 seconds ]
DESCRIPTION	describes feature and usage detection logic

# DBA\_FEATURE\_USAGE\_STATISTICS

- components behind the scene
- methods to refresh manually
- single checks in detail



# components behind the scene

## DBA\_FEATURE\_USAGE\_STATISTICS View:

```
SELECT samp.dbid,      fu.name,
       samp.version,   detected_usages,
       total_samples,
       Decode(To_char(last_usage_date, 'MM/DD/YYYY, HH:MI:SS'),
              NULL, 'FALSE',
              To_char(last_sample_date, 'MM/DD/YYYY, HH:MI:SS'),
              'TRUE', 'FALSE')
       currently_used,
       first_usage_date,
       last_usage_date,
       aux_count,
       feature_info,
       last_sample_date,
       last_sample_period,
       sample_interval,
       mt.description
FROM   wri$dbu_usage_sample samp,
       wri$dbu_feature_usage fu,
       wri$dbu_feature_metadata mt
WHERE  samp.dbid = fu.dbid
       AND samp.version = fu.version
       AND fu.name = mt.name
       AND fu.name NOT LIKE '_DBFUS_TEST%'
       /* filter out test features */
       AND Bitand(mt.usg_det_method, 4) != 4
       /* filter out disabled features */
```

# components behind the scene

<code>wri\$dbu_usage_sample samp</code>		<code>DBA_FEATURE_USAGE_STATISTICS</code>	
<code>*DBID</code>	←	<code>DBID</code>	database ID of database being tracked
<code>*VERSION</code>	←	<code>NAME</code>	name of feature
<code>*LAST_SAMPLE_DATE</code>	←	<code>VERSION</code>	the database version the feature was tracked in
<code>  LAST_SAMPLE_DATE_NUM</code>	←	<code>DETECTED_USAGES</code>	number of times the system has detected usage for th
<code>*LAST_SAMPLE_PERIOD</code>	←	<code>TOTAL_SAMPLES</code>	number of times the system has woken up and checked
<code>*TOTAL_SAMPLES</code>	←	<code>CURRENTLY_USED</code>	if usage was detected the last time the system check
<code>*SAMPLE_INTERVAL</code>	←	<code>FIRST_USAGE_DATE</code>	the first sample time the system detected usage for t
		<code>LAST_USAGE_DATE</code>	the last sample time the system detected usage for t
		<code>AUX_COUNT</code>	extra column to store feature specific usage data
		<code>FEATURE_INFO</code>	extra column to store feature specific usage data
		<code>LAST_SAMPLE_DATE</code>	last time the system checked for usage
		<code>LAST_SAMPLE_PERIOD</code>	amount of time between the last two usage sample tim
		<code>SAMPLE_INTERVAL</code>	[ 604800 seconds ]
		<code>DESCRIPTION</code>	describes feature and usage detection logic

# components behind the scene

wri\$ dbu\_feature\_usage fu

DBID

\*NAME

VERSION

\*FIRST\_USAGE\_DATE

\*LAST\_USAGE\_DATE

\*DETECTED\_USAGES

\*AUX\_COUNT

\*FEATURE\_INFO

ERROR\_COUNT

DBA\_FEATURE\_USAGE\_STATISTICS

DBID

NAME

VERSION

DETECTED\_USAGES

TOTAL\_SAMPLES

CURRENTLY\_USED

FIRST\_USAGE\_DATE

LAST\_USAGE\_DATE

AUX\_COUNT

FEATURE\_INFO

LAST\_SAMPLE\_DATE

LAST\_SAMPLE\_PERIOD

SAMPLE\_INTERVAL

DESCRIPTION

database ID of database being tracked

name of feature

the database version the feature was tracked in

number of times the system has detected usage for the feature

number of times the system has woken up and checked for usage

if usage was detected the last time the system checked for usage

the first sample time the system detected usage for the feature

the last sample time the system detected usage for the feature

extra column to store feature specific usage data

extra column to store feature specific usage data

last time the system checked for usage

amount of time between the last two usage sample times

[ 604800 seconds ]

describes feature and usage detection logic

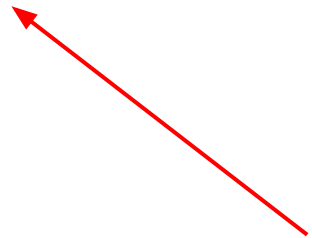
# components behind the scene

```
wri$ dbu_feature_metadata mt
```

```
NAME  
INST_CHK_METHOD  
INST_CHK_LOGIC  
USG_DET_METHOD  
USG_DET_LOGIC  
*DESCRIPTION
```

```
DBA_FEATURE_USAGE_STATISTICS
```

```
DBID          database ID of database being tracked  
NAME          name of feature  
VERSION       the database version the feature was tracked in  
DETECTED_USAGES  number of times the system has detected usage for th  
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SAMPLE_INTERVAL [ 604800 seconds ]  
DESCRIPTION    describes feature and usage detection logic
```



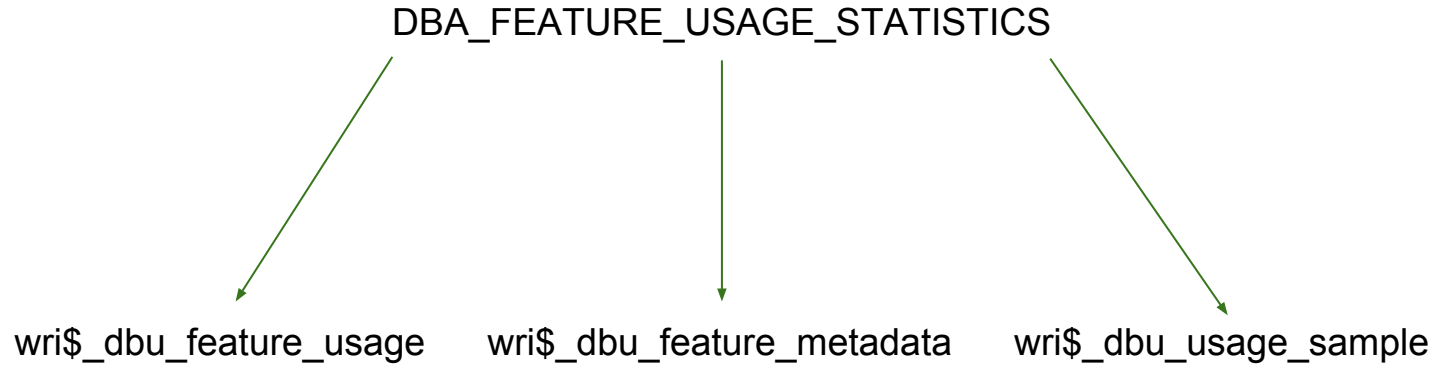
# components behind the scene

```
Decode (                                DBA_FEATURE_USAGE_STATISTICS
  To_char(last_usage_date ,             DBID          database ID of database being tracked
    'MM/DD/YYYY, HH:MI:SS' ),          NAME          name of feature
  NULL, 'FALSE',                        VERSION       the database version the feature was tracked in
  To_char( last_sample_date ,           DETECTED_USAGES number of times the system has detected usage for th
    'MM/DD/YYYY, HH:MI:SS' ),          TOTAL_SAMPLES number of times the system has woken up and checked
  'TRUE', 'FALSE')                     CURRENTLY_USED if usage was detected the last time the system check
                                         FIRST_USAGE_DATE the first sample time the system detected usage for
                                         LAST_USAGE_DATE  the last sample time the system detected usage for t
                                         AUX_COUNT       extra column to store feature specific usage data
                                         FEATURE_INFO    extra column to store feature specific usage data
                                         LAST_SAMPLE_DATE last time the system checked for usage
                                         LAST_SAMPLE_PERIOD amount of time between the last two usage sample tim
                                         SAMPLE_INTERVAL [ 604800 seconds ]
                                         DESCRIPTION     describes feature and usage detection logic
```

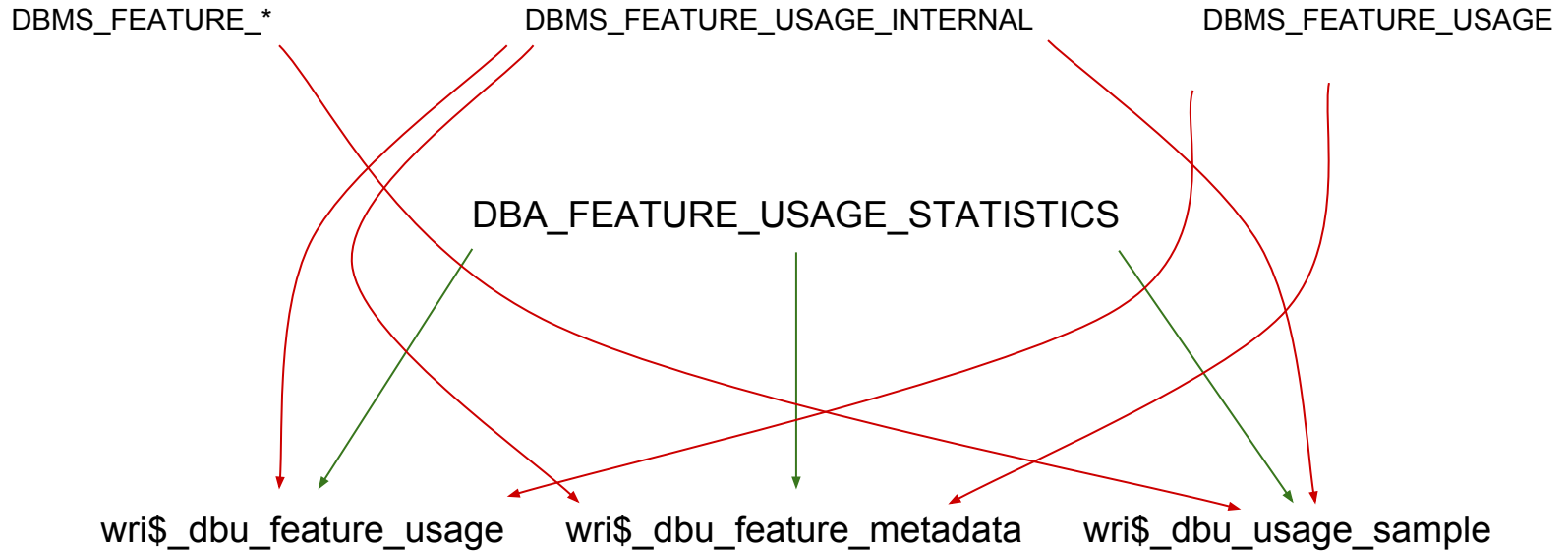
# components behind the scene

```
WHERE samp.dbid = fu.dbid
AND samp.version = fu.version
AND fu.name = mt.name
AND fu.name NOT LIKE '_DBFUS_TEST%'
/* filter out test features */
AND Bitand(mt.usg_det_method, 4) != 4
/* filter out disabled features */
```

# components behind the scene

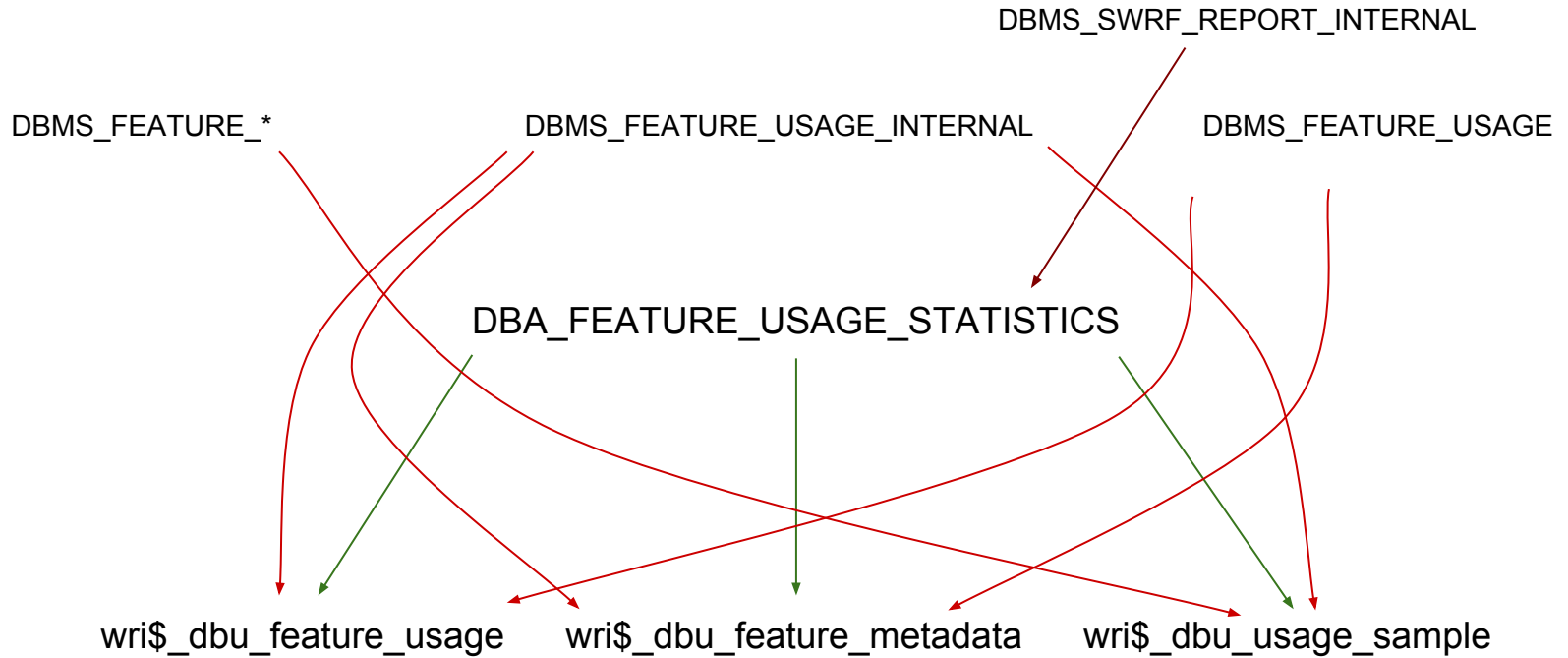


# components behind the scene





# components behind the scene



# DBA\_FEATURE\_USAGE\_STATISTICS

- components behind the scene
- methods to refresh manually
- single checks in detail

# methods to refresh manually

```
alter session set events 'immediate trace name mmon_test level 6';
```

**How to Manually Refresh Db\_feature\_usage\_statistics (Doc ID 1629485.1)**

# methods to refresh manually

```
alter session set events 'immediate trace name mmon_test level 6';
```

How to Manually Refresh Db\*\_feature\_usage\_statistics (Doc ID 1629485.1)

```
alter session set "_SWRF_TEST_ACTION"=53;
```

How to Manually Refresh Db\*\_feature\_usage\_statistics (Doc ID 1629485.1)

# other "\_SWRF\_TEST\_ACTION" values

SWR => Select Workload Repository (Framework?)

ADR auto purge

```
alter session set "_swrf_test_action" = 101;
```

Bug 9530322 ADR auto purge does not occur in ASM instance or standby database

Split the AWR partitions

```
alter session set "_swrf_test_action" = 72;
```

Manually Purge the Optimizer Statistics & AWR Snapshots to Reduce Space Usage of SYSAUX Tablespace (Doc ID 1965061.1)

AWR Snapshot traces

snapshot flush trace enable	10	disable	11
MMON action trace enable	28	disable	29

Troubleshooting: AWR Snapshot Collection Issues (Doc ID 1301503.1)

# methods to refresh manually

```
alter session set events 'immediate trace name mmon_test level 6';
```

How to Manually Refresh Db\_feature\_usage\_statistics (Doc ID 1629485.1)

```
alter session set "_SWF
```

# DEMO

```
_usage_statistics (Doc ID 1629485.1)
```

# DBA\_FEATURE\_USAGE\_STATISTICS

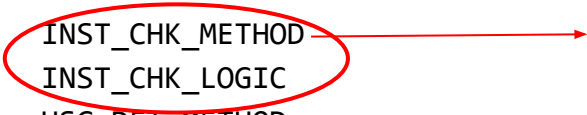
- components behind the scene
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# single checks in detail

wri\$\_dbu\_feature\_metadata mt

to check, if the feature is installed at all:

NAME	DBU_INST_ALWAYS_INSTALLED	1	/* no test required */
INST_CHK_METHOD	DBU_INST_OBJECT	2	/* object name in LOGIC */
INST_CHK_LOGIC	DBU_INST_TEST	4	/* only test */
USG_DET_METHOD			
USG_DET_LOGIC			
*DESCRIPTION			





# single checks in detail

wri\$\_dbu\_feature\_metadata mt      to check, if the feature is installed at all:

NAME	DBU_INST_ALWAYS_INSTALLED	1	/* no test required */
INST_CHK_METHOD	DBU_INST_OBJECT	2	/* object name in LOGIC */
INST_CHK_LOGIC	DBU_INST_TEST	4	/* only test */

USG\_DET\_METHOD

USG\_DET\_LOGIC

\*DESCRIPTION

method to be used to check feature usage::

DBU_DETECT_BY_SQL	1	/* SQL specified in USG_DET_LOGIC */
DBU_DETECT_BY_PROCEDURE	2	/* Procedure    --    "    --    */
DBU_DETECT_NULL	4	/* only test for _DBFUS_TEST_SQL_7 */

\$ORACLE\_HOME/rdbms/admin/catfusrg.sql -> dbmsfus.sql -> prvtfus.plb

# single checks in detail

wri\$\_dbu\_feature\_metadata mt      to check, if the feature is installed at all:

NAME	DBU_INST_ALWAYS_INSTALLED	1	/* no test required */
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USG_DET_METHOD			
USG_DET_LOGIC			
*DESCRIPTION	DBU_DETECT_BY_SQL	1	/* SQL specified in USG_DET_LOGIC */
	DBU_DETECT_BY_PROCEDURE	2	/* Procedure    --    "    --    */
	DBU_DETECT_NULL	4	/* only test for _DBFUS_TEST_SQL_7 */

examples:

Advanced Replication:      select count(\*), NULL, NULL from dba\_repcat;  
Zone maps:                    DBMS\_FEATURE\_ZMAP  
Oracle Text:                    ctxsys.drifeat.dr\$feature\_track

# single checks in detail

wri\$\_dbu\_feature\_metadata mt

DBMS\_FEATURE\_\*

NAME	Argument Name	Type	In/Out	Default
INST_CHK_METHOD	-----	-----	-----	-----
INST_CHK_LOGIC	IS_USED	NUMBER	OUT	
USG_DET_METHOD	DATA_RATIO	NUMBER	OUT	
USG_DET_LOGIC	CLOB_REST	CLOB	OUT	
*DESCRIPTION				

# single checks in detail

```
wri$_dbu_feature_metadata mt DBMS_FEATURE_*
```

NAME	Argument Name	Type	In/Out	Default
INST_CHK_METHOD	-----	-----	-----	-----
INST_CHK_LOGIC	IS_USED	NUMBER	OUT	
USG_DET_METHOD	DATA_RATIO	NUMBER	OUT	
USG_DET_LOGIC				
*DESCRIPTION				

# DEMO

# single checks in detail

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## Recent Posts

Oracle VirtualBox 5.0.x - Segmentation Fault in PERL

Switch off "\_rowsets\_enabled" in Oracle Database 12c

Oracle Database Release Status - MOS Note:742060.1

Ouch, this hurts: bug 21923026 - patch Oracle 12c Home before upgrading if you have OLTP Compression in 11g

OOW 2015 - Upgrade Hundreds and Thousands

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OOW 2015 - Upgrade and Migration Talks

PSU (and CPU/SPU) October 2015 got released

« [Airfare Pricing vs...](#) | [Main](#) | [Collaborate '14...](#) »

## New 11.2.0.4 Parameter: ENABLE\_GOLDENGATE\_REPLICATION

By Mike Dietrich-Oracle on Feb 11, 2014

Just learned something new I couldn't find actually in the doc at the first glance:

There's a new init.ora parameter introduced in Oracle Database 11.2.0.4 named:

`ENABLE_GOLDENGATE_REPLICATION`

By default it is set to `FALSE` and the parameter got introduced because not only the external use of Oracle GoldenGate requires a valid license but also the use of the internal APIs. For example, XStream provides high performance APIs that enable client applications to receive and send real-time data changes from an Oracle database. Other APIs were added for encryption support, trigger suppression, etc. None of these APIs are licensed with the Oracle database itself - the license is included with an Oracle GoldenGate license, and most of the APIs are not public.

So please make sure if you turn `ENABLE_GOLDENGATE_REPLICATION=TRUE` that you'll need to have a valid Oracle GoldenGate license in place.

That will apply to 3rd party products such as Dell Smart true.

-Mike

*Addition:* As a customer talked to me about that during the Sydney workshop last week I'd like to point out that this parameter does not effect the use of Oracle GoldenGate as a stand-alone tool but only the internal interfaces inside the database.

## About



Mike Dietrich

Master Product Manager - Database

Upgrade & Migrations - Oracle

So please make sure if you turn `ENABLE_GOLDENGATE_REPLICATION=TRUE` that you'll need to have a valid Oracle GoldenGate license in place.

between Arctic and Antarctica. Assisting customers in their reference projects onsite and remotely. Connect via:



# single checks in detail

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By Mike Dietrich-Oracle on Facebook

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There's a new init.ora parameter

`ENABLE_GOLDENGATE_REPLICATION`

By default it is set to `FALSE`

of Oracle GoldenGate replication

XStream provides high performance

real-time data changes for

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# DEMO

## About



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# single checks in detail

```
create or replace PROCEDURE dbms_feature_goldengate
  (feature_boolean OUT NUMBER, aux_count OUT NUMBER, feature_info OUT CLOB)
.....
select decode (count(*), 0, 0, 1) into num_capture
  from dba_capture where UPPER(purpose) = 'GOLDENGATE CAPTURE';

select decode (count(*), 0, 0, 1) into num_ds_capture from dba_capture
where UPPER(purpose) = 'GOLDENGATE CAPTURE' and UPPER(capture_type) = 'DOWNSTREAM';

select decode (count(*), 0, 0, 1) into num_apply from dba_apply
  where UPPER(purpose) IN ('GOLDENGATE APPLY', 'GOLDENGATE CAPTURE');

select sum(count) into num_dblogreader
  from GV$GOLDENGATE_CAPABILITIES where name like 'DBLOGREADER';

select sum(count) into num_transient_duplicate
  from GV$GOLDENGATE_CAPABILITIES where name like 'TRANSIENTDUPLICATE';

select sum(count) into num_trigger_suppression
  from GV$GOLDENGATE_CAPABILITIES where name like 'TRIGGERSUPPRESSION';
```

# report

## **Database Options/Management Packs Usage Reporting for Oracle Databases 11gR2 and 12c (Doc ID 1317265.1)**

### **PRODUCT USAGE**

#### **Description**

This section provides an overview of each option/pack that has been used in the database and if they are currently in use. It will also provide information when the product was first used and when it was used last time.

### **FEATURE USAGE DETAILS**

#### **Description**

This section provides a detailed report of features used that has triggered the usage of a product.

The report is based on the DBA\_FEATURE\_USAGE\_STATISTICS view.

The CURRENTLY\_USED column of DBA\_FEATURE\_USAGE\_STATISTICS view indicates if the feature in question was used during the last sampling interval by VERSION and DBID

```
SQL> @options_packs_usage_statistics.sql
```



# Disclaimer (again)

- this presentation is ONLY about the features and possibilities of DBA\_FEATURE\_USAGE\_STATISTICS view and supporting packages/procedures
- NO information about LMS activities
- NO information about license optimization

**Q/A ?**

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